

In re: Joo et al.
Serial No.: 10/715,273
Filed: November 17, 2003
Page 2 of 6

In the Claims:

1. (Currently Amended) An integrated circuit capacitor comprising:
a lower electrode on an integrated circuit substrate, the lower electrode comprising a metal layer on the integrated circuit substrate and hemispherical grain lumps that protrude from the metal layer opposite the integrated circuit substrate;
a dielectric layer on the hemispherical grain lumps opposite the integrated circuit substrate; and
an upper electrode on the dielectric layer opposite the lower electrode;
wherein the metal layer and the hemispherical grain lumps comprise at least one of Pt, Ru, Rh, Os, Ir and Pd,
wherein the metal layer comprises a first portion and a second portion on the first portion opposite the integrated circuit substrate, and
wherein the first portion comprises Pt, and the second portion comprises at least one of Ru, Rh, Os and Pd.

2. (Original) The capacitor of Claim 1, wherein the dielectric layer comprises at least one of Ta₂O₅, SrTiO₃(STO), (Ba, Sr)TiO₃(BST), PbTiO₃, Pb(Zr, Ti)O₃(PZT), SrBi₂Ta₂O₅(SBT), (Pb, La)(Zr, Ti)O₃, Bi₄Ti₃O₁₂, or BaTiO₃(BTO).

3-12. (Canceled)

13. (Previously Presented) An integrated circuit capacitor comprising:
a lower electrode on an integrated circuit substrate, the lower electrode comprising a metal layer on the integrated circuit substrate and hemispherical grain lumps that protrude from the metal layer opposite the integrated circuit substrate;
a dielectric layer on the hemispherical grain lumps opposite the integrated circuit substrate; and
an upper electrode on the dielectric layer opposite the lower electrode;
wherein the metal layer and the hemispherical grain lumps comprise at least one of Pt, Ru, Rh, Os, Ir and Pd, and
wherein the lower electrode comprises a metal layer on the substrate and a metal oxide layer on the metal layer opposite the substrate, and the hemispherical grain lumps protrude from the metal oxide layer opposite the metal layer.

In re: Joo et al.
Serial No.: 10/715,273
Filed: November 17, 2003
Page 3 of 6

14. (Original) The capacitor of Claim 13, wherein the metal layer comprises at least one of Pt, Ru, Rh, Os, Ir and Pd.

15-18. (Canceled)

19. (Previously Presented) The capacitor of Claim 13, wherein the dielectric layer comprises at least one of Ta_2O_5 , SrTiO_3 (STO), $(\text{Ba}, \text{Sr})\text{TiO}_3$ (BST), PbTiO_3 , $\text{Pb}(\text{Zr}, \text{Ti})\text{O}_3$ (PZT), $\text{SrBi}_2\text{Ta}_2\text{O}_5$ (SBT), $(\text{Pb}, \text{La})(\text{Zr}, \text{Ti})\text{O}_3$, $\text{Bi}_4\text{Ti}_3\text{O}_{12}$, or BaTiO_3 (BTO).